Mortality Rates and Smoking prevalence

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The focus of this presentation is on the generation of scenarios for future mortality improvements based on hypothetical changes in smoking prevalence. These scenarios are based on a stochastic mortality model in which overall mortality rates for a specific country depend on three quantities: smoking prevalence, smokers' and non-smokers' mortality rates, and a country-specific effect. While we assume smoking prevalence to be given, we discuss the estimation of smokers' and non-smokers' mortality rates based on overall mortality and smoking prevalence, where we take, in particular, the implied cessation rates for smokers into account. Based on these findings we will then consider models for the two mortality rates, and use those models to generate forecasts for smokers' and non-smokers' mortality. We will also investigate a model for country-specific differences in mortality. The overall mortality for any given country is then a function of the weighted average of the smokers' and non-smokers' mortality and country-specific mortality effects. Different scenarios for future smoking prevalence will then lead to different mortality forecasts. The quantitative impact of smoking prevalence on pension fund liabilities is then investigated by considering the values of life-annuities.